T E C H N I C A L M E M O R A N D U M

Utah Coal Regulatory Program

February 23, 2005

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor

THRU: Pete Hess, Environmental Scientist III/Engineer/Team Lead

FROM: Priscilla Burton, Environmental Scientist III/Soils, Team Lead

RE: Pace Canyon Fan Portal, Canyon Fuel Company, Dugout Canyon Mine, C/007/0039 , Task ID #2104

SUMMARY:

The application describes the construction of a fan portal and shaft in Pace Canyon. The BLM land was previously disturbed by the Snow Mine (1906 – 1960's) and more recently by logging activity. The soils information presented in the plan is limited. Further information is requested.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Legal and financial information for Arch Coal mining is found in General Chapter 1, dated February 2005. (This information was last reviewed under Task # 2069.) The applicant and operator is Canyon Fuel Company, LLC (Section 112.200). The Resident Agent is C.T. Corporation Systems (50 W. Broadway; SLC UT 84104). Canyon Fuel has offices in Colorado, a contact is provided in Section 112.200. Are other [Utah] representatives of Canyon Fuel authorized to make changes to the Mining and Reclamation Plan?

The information provided in Section 111 and 112 of General Chapter 1 indicates that the Permittee (Canyon Fuel Co., LLC) is owned by Arch Coal and/or its subsidiaries, Figure 1A outlines the corporate structure. And section 112.100 indicates that Delta Housing Inc has a minor (1%) interest in the Arch Western Resources, LLC.

Officers and directors of Canyon Fuel Co., LLC, Arch Western Bituminous Group, LLC, Arch Western Resources, LLC and Arch Coal, Inc are found in Appendix 1-1.
Coal mining and reclamation operations related through corporate structure are listed in Table 1-1 and include the active sites: SUFCO, Skyline and Soldier Canyon mines and the Banning Loadout and reclaimed sites: Gordon Creek No 3 & 6, Gordon Creek No. 2, 7, & 8, and Huntington No. 4 mines in Utah.

Findings:

The information provided does not meet the requirements for legal and financial information. Prior to approval, the Permittee must provide the following, in accordance with:

R645-301-111.100, Canyon Fuel has offices in Colorado, a contact is provided in Section 112.200. Are any other [Utah] representatives of Canyon Fuel authorized to make changes to the Mining and Reclamation Plan?

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

General Chapter 1 provides a three year violation history in Table 1-2 for mines related by corporate structure (listed in Table 1-1).

Findings:

The information provided meets the requirements of the regulations.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

Right of Entry information is found in the Dugout MRP, Chapter 1, Section 114 and in Appendix 1-1 and 1-3.

The BLM Realty Specialist, Mark Mackiewicz, has indicated the following:

"The Pace Canyon Road is noted in our 1980 Carbon County Road Maintenance Agreement. For maintenance purposes we consider the subject road county until it enters the NE1/4SE1/4 of section 25, T. 13 S. R. 12 E., therefore a public road as per definition noted below. From there onward the road then becomes a BLM system road. The road goes crosses two 40 acre parcels, one in section 25, the other in lot 2, section 30, T. 13 S., R. 13 E.(The road through these two parcels is not considered a public road). Any use of this road that would require maintenance (grading, drainage improvement, widening) would require a right-of-way from BLM. The short term use of the road without maintenance for access purposes to the fan site would not require right-of-way. Use would be required casual. "

Findings:

Information provided in the application does not meet the requirements of this section of the regulations.

R645-301-114.100, The legal description of the BLM land to be disturbed for the Pace Canyon fan portal and shaft must be added to the right of entry information documented in Section 114 of the Dugout MRP. [PWB]

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The legal description of the state and federal lease areas, fee land, BLM land, and BLM right of way are provided in section 114 of the MRP. The legal description of the BLM land disturbed for the Pace Canyon fan portal and shaft must be added to this list. (See deficiency written under Right of Entry above.)

The Division understands through email communication on March 2, 2005 between Pete Hess and Mark Mackiewicz , BLM Realty Specialist, that at the location of the proposed disturbance, the Pace Canyon road is a private road. The application should document that the road is a private road.

Findings:

Information provided in the application does not meet the requirements of this section of the regulations. Prior to approval, please provide the following, in accordance with:

R645-301-115.300, Although recent email communications from the BLM indicate that it is a private road, the application must state whether the road adjacent to the fan portal is a public or private road. [PWB]

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

No information was found in either General Volume 1 or the Dugout Canyon MRP. Include pertinent public notice documentation in Appendix 1-2.

Findings:

Information provided in the application does not meet the requirements of this section of the regulations. Prior to approval, please provide the following, in accordance with:

R645-300.121.100 and R645-301-117.200, Include pertinent public notice documentation in Appendix 1-2.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The permit area encompasses 7,111 acres (Section 114, Plate 1-1 and RA Plate 1-1). Plates 1-1, 1-2 and 1-4 need to be updated with this Pace Cyn fan portal amendment. A legal description of the permit area is provided in Section 114 of the MRP.

The disturbed area is currently 20.31 acres and with the addition of Pace Canyon facilities will increase, page 1-9 and Appendix 1-4 must be updated accordingly.

Findings:

The information provided does not meet the requirements of the regulations. Prior to approval, provide the following in accordance with :

R645-301-521,163, Plates 1-1 and 1-4, page 1-9 of Chapter 1, and Appendix 1-4 of the Dugout MRP must be updated to include the Pace Cyn surface disturbance.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Chapter 2, Soils, Sections 220 through 224, discusses the soil resources within the Dugout Mine permit area, in Dugout and Pace Canyons. Relevant soils information includes current and published soil surveys, characterizations, and substitute topsoil identification. The Analysis section discusses resource information as follows:

- Soil Survey Information
- Disturbed Soils
- Undisturbed Soils
- Soil Productivity
- Substitute Topsoil

Soil Survey Information

Soil survey information is provided by both a general-area Order-III and site-specific Order-I soil surveys. The Order-III survey is reproduced from the SCS "Soil Survey of the Carbon County Area" and is delineated on a general area soils map (Plate 2-1). According to the SCS soil survey, soils present on the east/south-east facing slopes of Dugout and Pace Canyons are part of the Rock outcrop-RubblelandTravessilla complex (#96) while those on the west/north-west facing slopes are shown as Croydon loam (#21) at lower elevations and Midfork family-Comodore complex (#62) at higher elevations in the upper reaches of the canyon. The predominantly stoney to gravelly sandy loam soils formed from sandstone, shale colluvium, and alluvium. Due to steepness of slope and soil quality, all of these soils are highly erosive. Shallow soils dominate the east facing side slopes while generally deeper soils characterize the west facing toe slopes.

The Order-I survey of Dugout Canyon was conducted by Chris Hansen of EarthFax Engineering, Inc. (A Qualification statement for performing the Dugout Canyon soil survey and a personal Resume are provided in Appendix 2-3 with the Soil Test Pit Logs.) A total of 12 soil test pits were excavated and are located on Plate 2-2, Disturbed Area Soil Map. Soil test pits located in disturbed/overburden soils include TP-2, 3, and 11; the remaining pits were located in Datino Variant (Type TS) soils with one pit (TP 16) in Rock Outcrop, Rubbleland, Travessilla (Map Unit 96). All sampling and characterization was according to the Division’s Guidelines for Topsoil and Overburden', (see Table 2-1 forlaboratory data and analytical summaries, MRPPits 7, 14 and 14A were not sampled, but pit descriptions were used to estimate soil volumes.)

The survey of Pace Canyon was conducted by Dan Larsen of Environmental Industrial Services, Inc. in 2003 for the BLM Environmental Assessment and supplemented by additional test pits in November 2004 for the Permittee. Photographs from the 2004 survey are found in Appendix 2-3, but test pit logs, laboratory analysis, and soils map are missing for Pace Canyon.

Dugout Canyon Disturbed Soils

A large portion of the mine facility's area is covered by overburden and disturbed soils consisting of soil mixed with coal waste and/or waste rock from previous mining operations. These soils are described by soil test pits TP-2, TP-3, and TP-11. The overburden is a mixture of rock and/or coal waste with Travessilla soils. The Travessilla soils are classified by the SCS soil survey as loamy, mixed (calcareous) mesic, Lithic Ustic Torriorthents. The overburden is found in the flat areas and on most of the steep slopes; is moderately well drained, and supports sage brush, juniper, rabbit brush, and a variety of grasses. Soil thickness varies from a few feet to more than eight feet. Generally, the overburden soils are described as a "gravelly loam" with rock concentrations between 10 and 40 percent and rock size that varies from gravel to boulder. Rock fragments are composed of sandstone with some siltstone blocks.

Dugout Canyon Undisturbed Soils

The remainder of the facilities area has soils that appear to be undisturbed or have been only slightly disturbed. Soils present in the canyon bottom lie within the disturbed and undisturbed areas of the mine. The undisturbed soils were identified by the Order-I survey as part of the SCS listed soil unit Datino Variant complex, and were given the distinction "Soil Type TS. " According to the SCS Carbon County soils survey, the Datino Variant soil complex is characterized as very deep, well drained, moderate permeable soils on mountain slopes being formed in colluvium derived dominantly from sandstone and shale. The SCS survey defines Datino Variant soils as loamy-skeletal, mixed Typic Haploborolls. The typic subgroup of Haploborolls[2] is defined as freely drained soils with a moderatelythick brownish mollic epipedon. Typic Haploborolls were formed in alluvium during the latePleistocene or Holocene ages, do not have a shallow lithic (stone) contact, and do not have deep wide cracks in most years. The USDA handbook further states that where slopes are suitable, Haploborolls are mostly under cultivation.

Undisturbed TS soils, as represented by soil test pits TP-1, 4, 5, 6, 7, 8, 9, 14, and 14A, are found on both sides of Dugout Creek in the northeastern portion and in the southwestern portion of the facilities area. The TS soils are found in flat lying areas and on slopes with grades up to 40 percent or more. The soil supports vegetation consisting of sage, cottonwood, Gambel oak, grass, pinyon, and fir. Information condensed from soil test pit TP-4, TP-6 and lower sections of pit TP-1 show soil horizons 01 (1 inch), Al (1 to 5 inches), B2

(5 to 14 inches), B3 (14 to 28 inches), and C (28 inches to 9 feet). Portions of TP-5 and TP-8 soil profiles appear to have been reworked by Dugout Creek; the upper four feet of TP-1 soil profile appear disturbed. Undisturbed Type TS soils have acceptable physical and chemical characteristic results consistent with requirements outlined by DOGM's soil and overburden guidelines as recorded in Table 2-1.

Other undisturbed soils located within the Disturbed Area Boundary and described by the SCS soils Order-III survey include Croydon loam, Comodore-Datino Variant complex, and Rock OutcropRubbleland-Travessilla complex soils.

Soil Productivity

Current soil productivity for the undisturbed and/or slightly disturbed soils is reported by the 1996 survey for living cover percentages as recorded in Section 321.100.

Substitute Topsoil

The disturbed soils within the Dugout Canyon area have been significantly altered by previous mining activities and have lost their native identities. These disturbed soils, or overburden materials, typically contain waste rock and/or coal waste. With the exception of rock fragments and coal waste, these overburden materials have physical and chemical properties that are within DOGM's acceptable range for soil and overburden guidelines and could therefore be considered a substitute topsoil. The Division recognizes that native soils contain high percentages of rock fragments, is inevitable and does not present a reclamation hazard. Indeed, to reclaim and restore the land to pre-mining conditions will require soils with indigenous rock fragment volumes and content. Therefore, it is not only acceptable, but desirable to salvage soils containing intrinsic rock. Waste and coal waste will be segregated from the soils and disposed of properly.

Findings:

The information provided does not meet the regulatory requirements of this section. The Permittee must provide the following in accordance with:

R645-301-222, Provide the 2003 Soil Survey conducted for the BLM EA as well as the following information from the 2004 supplemental soil survey of Pace Canyon: test pit logs, laboratory analysis, and soils map showing location of disturbed and undisturbed soils.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

Plate 4-1 illustrates and chapter 4 describes premining land uses for the permit area as wildlife habitat and grazing rangeland (cattle and sheep). The land has not been developed or improved for these uses. Recreational use of the permit area is limited due to lack of access through private property. Carbon County has zoned the permit area for mining and grazing (Section 4.11.120). In 1996, six million board feet were harvested from the permit area, mostly within the Dugout Creek drainage (areas are shown on a map in Exhibit B, Appendix 4-3). .

Productivity of the land surrounding the proposed disturbed area was estimated by George Cook, National Resources Conservation Service, on August 6, 1996 to be 1400 lbs/acre air-dry herbage, low-good condition. With no snow on the the ground, on December 3, 1997, Mr. Cook reported the Dugout Canyon Mine to have 800 and 1500 lbs/acre air dry herbage in the pinyon/juniper/sage and riparian areas respectively. Previous productivity statements about Dugout Canyon showed the area to be severely overgrazed and degraded in the late 1970's and early 1980's. The proposed disturbed area is still grazed, but it is in a somewhat better condition.

A drive through the permit area above the disturbed area where logging operations had been conducted revealed a degraded condition in the summer of 1997. Steep slopes along Dugout Creek had been logged, road cut with material was side cast, timber slash was in the stream, a culvert plugged, and several small slides had deposited sediment into Dugout Creek. Limited revegetation had occurred. Flatter riparian areas were overgrazed with streambanks sloughing and grass approximately an inch high. DWR stated that logged areas had little ground cover and there were numerous roads concentrating water flows. Appendix 7-9, page 2, says the logged Douglas fir area was rated in fair conditionThe Division noted that a fair condition report for the Douglas fir logged area did not accurately reflect on the ground conditions. The Division hydrologist indicated that the culvert sizing was conservative and adequate to account for the increased runoff and sedimentation from logging activities within the watershed.

Coal mining has occurred within Dugout Canyon since 1925. The Red Glow Mine on the east side of Dugout Canyon was hand-developed by D. J. Collins in 1925. The Rock Canyon seam on the west side of Dugout Canyon was first mined in 1952 by E.S.O. Coal Company. The Knight Ideal Coal Company mined the Rock Canyon and Gilson coal seams between 1958 and 1964. They extracted approximately 1,326,000 tons of coal in that period. No coal has been mined since 1964, although the portals have been opened and explored

several times since then. Predisturbance areas in the location of the Dugout Mine facilities are illustrated on Plates 5-1 and 5-4.

The Fish Creek and Pace Canyon Mines which operated in the early 1900's are also located within the permit area. The site of the Pace Canyon fan portals is located at the former Snow Mine. The Snow mine became active in 1906 with largest output occurring between 1932-1940. The site was inventoried in 1980, but was not recommended for nomination to the historic register. A subsequent investigation of the site in 2001 revealed that the site was destroyed by logging equipment. Plate PC5-4 indicates the pre-disturbance mine workings on the east side of the creek, but does not provide locations of pre-disturbance areas (mine dumps) within the disturbed area boundary.

Currently, a main watering source and holding corral for livestock (80 head) are the land uses near the Pace Canyon fan portal site (Section 411.130). An access road runs through the fan portal site.

Findings:

Information provided in the proposal does not meet the requirements of this section of the regulations. Prior to approval, the Permittee must provide the following information, in accordance with:

R645-301-411.110, Plate PC5-4 (pre-disturbance area map) must indicate the location of mine dumps within the Snow Mine disturbed area. Plate 4-1, LAND USE MAP in the MRP must be updated to include the main livestock watering source, and the holding corral outside the Pace Canyon disturbed area.

R645-301- 412.200, The Permittee must provide documentation of landowner or surface manager comments, especially with respect to Pace Canyon Grazing Allotment No. 24085.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Chapter 2, Soils, Sections 230 through 234, discusses the soil's operation plan for the proposed Dugout Canyon Mine. Relevant information includes soil salvage, stockpiling, and topsoil substitutes and supplements. The Analysis section discusses operational information as follows:

- Topsoil and Subsoil Removal
- Culvert Expansion Soil Removal
- Topsoil Substitutes and Supplements
- Topsoil Storage

Topsoil Removal and Storage

The MRP describes salvage of both topsoil and subsoils within Type TS soils in Dugout Canyon areas #2, 3, and 4. All A, B and C horizons will be salvaged from TS soils, which are deep rich Mollisols, with excellent quality subsoil. These B and C horizon soils will be salvaged, segregated and stockpiled as substitute topsoil.

The estimated volumes of stockpiled soils are presented in Table 2-2 and in Appendix 2-6 which includes soil recovery calculations. Topsoil and subsoils are salvaged from the northwest facilities area (area 2) will yield 1,653 CY; the coal storage (area 3) will yield 4,869 CY; the sediment pond, slope area areas between road and creek (areas 4, 6, 7) will yield 20,118 CY; the water tank area (area 8) overburden soils will yield 247 CY; and the Dugout Creek culvert area (area 5) will yield 1,568 CY. In total, 28,455 CY of soil will be salvaged and stockpiled.

Soils to be salvaged prior to construction are those labeled with TS on Plate 2-2. The A, B and C horizons will be salvaged. Undisturbed soils marked #96 will not be disturbed although they are within the disturbed boundary. These southwest facing, undisturbed soils are therefore considered a buffer zone. A non-biased, third party, professional soil scientist will be on-site during soil salvage to monitor and supervise soil salvage operations for the purpose of maximizing soil salvage volumes and quantities. Surface disturbance activities will only take place after topsoil removal.

The estimated volumes of stockpiled soils are presented in Table 2-2 and in Appendix 2-5 (Soil Removal from Within the Culvert Expansion Area) and Appendix 2-6 (Topsoil, Substitute Topsoil, and Storage Pile Calculations). Anestimated total of 28,455 CY of soil will be salvaged and stockpiled.

Additional areas of TS soils were identified as either needing protection during operations or as requiring salvage if they are threatened by future activities at the mine, as

described below:

The soils on the southwest facing slope where the north and east drainages of Dugout Creek unite.

The soils on the west facing slope in the area of the coal storage pile. A discussion of the salvage of these soils is located in Appendix 2-6.

In Pace Canyon, the soil survey indicates that variable soil depths (from 0 – 36 inches) are salvageable (Appendix 2-3). The MRP indicates in section R645-301-232.100 that soil recovery will be mazimized and topsoil and subsoil will be salvaged and stored together. Consequently, the presence of a qualified person to direct the salvage is indicated. For the purposes of calculation, an average of 12 inches salvaged from a 1.3 acre area is assumed in Appendix 2-9. A salvage quantity of 2,128 cu yds was calculated for Pace Canyon. The topsoil will be sampled at the time of salvage for the parameters indicated in MRP Section R645-301-233.300.

Culvert Expansion Soil Removal

Canyon Fuel Company has committed to salvage soils from steep slopes within the culvert expansion area along Dugout Creek provided that salvage operations do not jeopardize slope stability and safety of construction workers. A qualified soils scientist will decide which soils from steep slopes are suitable for salvage. The construction supervisor will decide which slopes are safe to remove soil from. By mutual agreement, the decision for soil salvage on what slopes will be made based on slope steepness, the potential for slope failure, and timing within the construction sequence. Timing is critical to help maximize safety and slope integrity during salvage operations by coordinating culvert installation and fill placement immediately after soil removal. The placed fills will stabilize the hillsides and will remain in place at final reclamation. After construction, an as-built map will illustrate which areas received salvaged and what volumes of soil were salvaged.

Installation of a culvert in Dugout Creek will result in the removal and storage of 1,568 CY of riparian soil. The soil removal volumes are based on the assumption and calculations provided in Appendix 2-5. Soils removed during culvert construction will be stored separately from other soils and are expressly designated for reclamation of the Dugout Creek, riparian area. Soils on the northwest facing slope of the stream on the opposite bank from the operations pad at the location of the sediment pond will not be salvaged due to their importance in stabilizing the steep stream bank. The idea of protecting the soils with geotextile fabric was discarded after it was determined that the stream bank would not be re-exposed during reclamation, since the channel will be moved westward to improve stability of the slope. Therefore this 300 foot length of streambank soils will be buried in the fill in order to stabilize the entire slope above. The Division concurs with this judgement.

Topsoil Substitutes and Supplements

The Facilities area (Area 1 on Plate 2-2). Soils from Area 1 will be utilized as substitute topsoil at final reclamation if they are not contaminated. Appendix 2-6 provides calculations showing that if 2 feet of material is recovered from this location, approximately 6.504 CY of additional substitute topsoil could be available after testing and approval for use. Any waste will be segregated from the soil material and material heavily contaminated with coal waste will not be used.

Culvert installation and pad construction will require importing fill. The MRP commits to demonstrate the suitability of the imported fill by determining if the fill is acid- and/or toxic-forming prior to placement. Acid and/or toxic-forming materials will not be used.

Topsoil Storage

The majority of the salvaged soil is located at the Soldier Canyon Mine topsoil storage area (Plate 2-3 and Appendix 2-7) with the Dugout stockpile marked and kept separate from the Soldier Canyon Mine stored soils. A contiguous containment berm separates the Dugout soil pile from the Soldier Canyon Mine piles. The containment berm is designed as a self contained Alternate Sedimentation Control Area (ASCA). Section 231.400 gives the construction, modification, use, and maintenance of the storage piles. The pile is designed to hold a maximum volume of 17,000 CY of soil. The total projected volume of soil salvage from Dugout, culvert expansion area, Gilson fan, and topsoil borrow is 28,455 CY of soil.

At the time of permitting, the Soldier Canyon Mine soil stockpile was infested with Cheatgrass. Therefore, the applicant committed to maintain, to the extent possible, the stockpile's interim vegetation in a noxious weed- and Cheatgrass-free state. Discussion has focused on controlling the Cheatgrass using both selective and non-selective herbicides in early spring before dormancy breaks with other desirable plants, and by using pre-emergent herbicides in the fall to kill germinating Cheatgrass.

Two small stockpiles will be located in Pace Canyon for reclamation of the fan portal (Appendix 2-9 and Plate PC5-2). These stockpiles will hold 1,264 and 925 cu yds. They will be constructed with 1h:1v side slopes. Topsoil will also be temporarily stockpiled above the portal and along the channel diversion area for immediate replacement after construction of the portal and channel diversion (MRP section 242.100.) The site must be fenced to protect the topsoil stockpiles from grazing and to protect the livestock herd in Pace Canyon Grazing Allotment No. 24085.

The MRP states that stockpiled soil in jeopardy of being detrimentally affected in terms of soil quantity and quality by mine operations may be temporarily redistributed. Such action will only take place by prior approval of DOGM with appropriate amendment changes to the MRP.

Findings:

The information provided does not meet the regulatory requirements of this section. Prior to approval, the plan must include the following:

R645-301-232.200, The depth of topsoil is variable and should be illustrated using an isopach derived from the 2004 survey information. The presence of a qualified person to direct the salvage is indicated. The Division requests advance notification of the topsoil salvage, so that a Division inspector may be present as well.

R645-301-233.200, Topsoil and subsoil will be sampled during salvage for the parameters indicated in MRP Section R645-301-233.300. The number of samples to be taken and the method of sampling must be indicated.

R645-234.210, Show on a plate the location of temporarily stockpiled topsoil (as described in Sectin 242.100, above the portal and along the channel diversion area for immediate replacement after construction of the portal and channel diversion).

R645-310234.230, For prompt establishment of vegetation and protection from erosion, outslopes of stockpiled soil must not exceed 2h:1v. • The site must be fenced to protect the topsoil stockpiles from grazing by livestock in Pace Canyon Grazing Allotment No. 24085.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Acid- and Toxic-Forming Materials and Underground Development Waste

Analyses presented in Chapter 6 of the proposed Phase II MRP indicate that at the time

of permitting acid- and toxic forming materials were not present within the permit area. Parameters defining acid- and toxic-forming materials will periodically be monitored as described in Chapter 6. In the event that acid- or toxic forming materials are identified, they will be disposed of at the refuse disposaldisposal site as described in Chapter 5 and the Refuse Amendment Volume of the MRP. Waste rock will not be used during reclamation, and soil substitutes will be used only if their chemical and physical properties are determined to be adequate through appropriate analyses.

The coal mine waste remaining on the surface from the Snow Mine as well as the shaft material excavated during construction must be sampled for acid/toxic information. The plan should indicate sampling frequency and parameters to be analyzed. Disposition of this coal mine waste during reclamation must be disclosed in the application.

Findings:

The information provided does not meet the regulatory requirements of this section. Prior to approval, the plan must include the following:

R645-301-731.311, The coal mine waste remaining on the surface from the Snow Mine as well as the shaft material excavated during construction must be sampled for acid/toxic information. The plan should indicate sampling frequency and parameters to be analyzed. Page 5-49 of the application indicates that oxidized coal encountered during shaft construction will be disposed of at the Waste Rock site. The disposition of the Snow Mine coal mine waste during reclamation must be disclosed in the application.

RECLAMATION PLAN

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The postmining land use will be livestock grazing and wildlife habitat. The plan says final reclamation activities, such as grading and seeding, will be completed in a manner to provide lands able to support the post lining land use. Slopes in Pace Canyon will be returned to 2h:1v with small sections of slopes as steep as 1.6h:1 (Section 553.100). Plates 5-3 and 5-4 show numerous cross sections where slopes are steeper than 50% in Dugout Canyon. According to the BLM, these 50% slopes are considered too steep for livestock grazing. The

BLM's grazing management plan for the Randolph unit, includes suitability tables based on slope percent and slope length. Slopessteeper than 50 % (2h: lv) were listed asunsuitable for grazing.

The Permittee justified the slope lengths and steepness by saying they are similar to the surrounding area. The Division recognizes the premining area has steep slopes; however, given the land use and the unstable condition of the area until vegetation establishment, steep slopes should be confined to upland areas and should not be in the riparian zone (riparian zone as defined in Plate 3-lA and subsequent Division field measurements).

Much of the disturbed area was previously mined and not reclaimed to the current standards. Using current definitions, previous mining activities can be classified as having disturbed or just affected the land in Dugout Canyon. Exploration activities occurred on the site in the 1980's and then again in the 1990's. No topsoil was saved in initial development. However, adequate substitute material should be available to make up the difference as growth medium.

Roads exist (prior to current mining) through the permit and disturbed areas in Dugout and Pace Canyons. Theses roads will remain for the postmining land use. The plan says the Dugout Canyon road has a width of 16 to 25 feet within the disturbed area. The reclaimed road will also have a width of about 16 feet. The Pace Canyon road will be returned to its original location and have a width of 15 feet.

The Bureau of Land Management and State of Utah own the land in the disturbed area. Appendix 4-2 contains letters from the State and the BLM concurring with the postmining land use.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Chapter 2, Soils, Sections 240 through 250, discusses the soil's reclamation plan for the proposed Dugout Canyon Mine. Appendix 2-6 provides information on topsoil volumes. Chapter 5, section 542.200, and Chapter 3, section 341.200, address slope stability and

erosion control, respectively. Reclamation Topography is shown on Plate 5-5 and Reclamation Cross- Sections are shown on six sheets of Plates 5-6. This Analysis section discusses reclamation information as follows:

- Soil Redistribution
- Soil Nutrients and Amendments
- Soil Stabilization

Soil Redistribution

Cut and fill calculations for the site are found on page 5-61 and Appendix 5-5. An estimated 99,630 CY are needed for fill and an estimated cut quantity is 97,575 CY. This leaves a difference of 2,055 C Y of fill.

Topsoil will be replaced on all areas with slopes less than 2:1 (page 2-38). Based on the 28, 455 CY of salvaged soil (see Appendix 2-6) and 14.7 acres or 640,332 sq ft to receive topsoil, the average soil redistribution will be a depth of 14.4 inches as stated on page 2-39 of the MRP. However, the soils salvaged from the culvert expansion, 1,568 CY, were included in the soil redistribution depths, but should not have been, since these soils will be returned to the reclaimed channel area. This reduces the reclamation topsoil depth to 13.6 inches. (26,887 CY x 27 CF/CY = 725,949 CF. 725,949 CF x 640, 332 SF = 1.13 ft or 13.6 inches.) If the underlying material is suitable, these soil depths will allow for the implementation of surface roughening reclamation techniques, such as deep pocking, or gouging of the soil surface without penetrating the subsurface fills. Should the additional 6,504 CY of topsoil substitute material become available during reclamation, the topsoil depth would increase to approximately 16 inches. If excess soil is available after channel reclamation, then these excess soils may be used else where in the disturbance area.

Where dictated by the reclamation channel design, riparian soils (1,568 CY salvaged and stored separately) will be placed within the interstitial spaces of the riprap to promote riparian vegetation establishment. Soils placed outside the riprap areas will be reseeded following soil preparation and surface.

As noted in the backfilling and grading section of the engineering review within this Technical

Analysis, all slopes should receive topsoil (R645-301-553.100). Any areas which will not receive topsoil should be identified on the Reclamation Topography Map, Plate 5-5.

Soil will be replaced in all disturbed areas (except the road) in Pace Canyon. The MRP cites Plate 7-5A as illustrating this information, but it was not found on Plate 7-5A.

Soil Nutrients and Amendments

Soil nutrients and amendments will be applied to the redistributed soils based on analyses of samples collected from the stockpiled topsoil.

Soil Stabilization

Soil may be replaced at grades of up to 1.5h: lv (page 5-70). The steepness of these slopes will be reduced at their base, providing a concave slope. Soil stabilization techniques also include ripping the subsoils (see page 2-39), gouging all slopes 3H: 1V or greater after topsoil application (2-40 and 576) and hydromulching the seeded surface (page 2-41 and 3-44 and 3-50). Slopes which are 3h: lv or steeper will be gouged using a trackhoe (page 5-70).

Findings:

The information provided does not meet the regulatory requirements of this section. Prior to approval, supply the following:

R645-301-241, Soil will be replaced in all disturbed areas (except the road) in Pace Canyon. The MRP (p. 2-41) cites Plate 7-5A as illustrating this information, but it was not found on Plate 7-5A.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Pace Canyon

Extreme roughening is listed as one possible treatment for final reclamation on p 2-40. Also it is shown on Plate 7-5A as a main treatment for the site during operations. Plate PC5-5 should show reclamation treatments: topsoil depths, hay, gouged, mulched and seeded areas.

Findings:

The information provided does not meet the requirements for Soil Stabilization at the Pace Canyon site. Prior to approval, provide the following information, in accordance with:

R645-301-244, Ensure that Plate 7-5A is labeled "contemporaneous reclamation treatments" and show final reclamation treatments: topsoil depths, hay, gouged, mulched and seeded areas on Plate PC5-5.

RECOMMENDATIONS:

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